

(19) World Intellectual Property
Organization
International Bureau



550 860

(43) International Publication Date
7 October 2004 (07.10.2004)

PCT

(10) International Publication Number
WO 2004/086526 A2

(51) International Patent Classification⁷: **H01L 51/00**

(21) International Application Number:
PCT/EP2004/003111

(22) International Filing Date: 24 March 2004 (24.03.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/458,847 28 March 2003 (28.03.2003) US

(71) Applicants (for all designated States except US): **TECHNISCHE UNIVERSITÄT DARMSTADT [DE/DE]**; Petersenstrasse 23, 64289 Darmstadt (DE). **INTER-UNIVERSITAIR MICROELEKTRONICA CENTRUM [BE/BE]**; 75, Kapeldreef, B-3001 Leuven (BE). **UNIVERSITE LOUIS PASTEUR [FR/FR]**; 4, Rue Blaise Pascal, F-67070 Strasbourg (FR). **CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE [FR/FR]**; 23, Rue du Loess, F-67037 Strasbourg (FR).

(71) Applicant and

(72) Inventor: **MUCCINI, Michele [IT/IT]**; Via P. Fabbri, 50, I-40138 Bologna (IT).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **HEREMANS, Paul [BE/BE]**; 99, Tiensestraat, B-3000 Leuven (BE).

REYNAERT, Johan, Lieven, Hendrik [BE/BE]; 60, Neerbeekstraat, B-8501 Bissegem (BE). **ZIESSEL, Raymond [FR/FR]**; 3, rue des Cailles, F-67460 Souffelweyersheim (FR). **HEPP, Aline [DE/DE]**; Rhoenring 129, 64289 Darmstadt (DE). **SCHMECHEL, Roland [DE/DE]**; Rossdorfer Strasse 25, 64287 Darmstadt (DE). **VON SEGGERN, Heinz [DE/DE]**; Kappengasse 20, 64625 Darmstadt (DE). **HEIL, Holger [DE/DE]**; Muehlberg 1, 63628 Bad Soden-Salmuenster (DE).

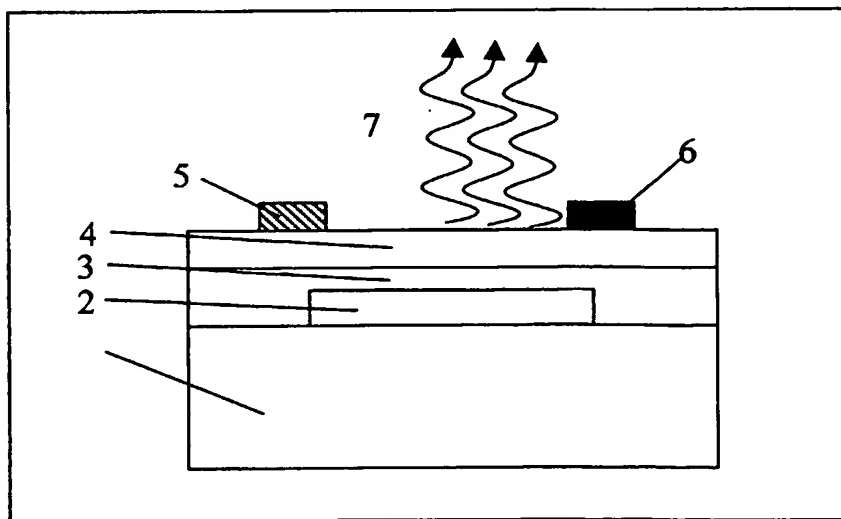
(74) Agent: **MODIANO, Guido**; Odiano & Associati, Via Meravigli, 16, IT-20123 Milano (IT).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR,

[Continued on next page]

(54) Title: **ORGANIC ELECTROLUMINESCENCE GENERATING DEVICES**



(57) Abstract: An electroluminescence generating device comprising e. a channel of organic semiconductor material, said channel being able to carry both types of charge carriers, said charge carriers being electrons and holes; f. an electron electrode, said electron electrode being in contact with said channel and positioned on top of a first side of said channel layer or within said channel layer, said electron electrode being able to inject electrons in said channel layer; g. a hole electrode, said hole electrode being spaced apart from said electron electrode, said hole electrode being in contact with said channel and positioned on top of said first side of said channel layer or within said channel layer, said hole

electrode being able to inject holes into said channel; h. a control electrode positioned on said first side or on a second side of said channel; whereby light emission of said electroluminescence generating device can be acquired by applying an electrical potential difference between said electron electrode and said hole electrode.

WO 2004/086526 A2



GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Published:

- *without international search report and to be republished upon receipt of that report*